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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,983	07/28/2003	Masanobu Ando	T36-158111M/KOH	4114

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MCGINN & GIBB, PLLC
8321 OLD COURTHOUSE ROAD
SUITE 200
VIENNA, VA 22182-3817

EXAMINER

ROSENBERGER, FREDERICK F

ART UNIT PAPER NUMBER

2878

DATE MAILED: 08/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

ABW

Office Action Summary	Application No.	Applicant(s)	
	10/627,983	ANDO ET AL.	
	Examiner	Art Unit	
	Frederick F. Rosenberger	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 12 is/are rejected.
- 7) ☒ Claim(s) 6-11 and 13-17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment dated 5/23/2005 has been received and entered. Amendments have been made to the specification and claims 1, 2, and 5. New claims 11-17 have been added. Accordingly, claims 1-17 are now pending in this application.

Specification

2. The disclosure is objected to because of the following informalities: In the amendment filed on 5/23/2005, page 2, in regards to the amendments to the title of the invention, "scintillator counter" in line 2 of the proposed amendment should be "scintillation counter".

Appropriate correction is required.

Claim Objections

3. Claims 11 and 17 are objected to because of the following informalities: In line 3 of claim 11, "radiated" should be "irradiated". In lines 2 and 3 of claim 17, "spectrascope" should be "spectroscope". Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Shmagin et al. (US Patent # 5,875,052). With reference to Figure 3, Shmagin et al. disclose a scintillating material for use in an optical information storage system comprising a single heterostructure **12'** of Group III-V nitride semiconductor material (column 5, lines 13-15). The heterostructure **12'** is composed of a layer of InGaN **36** and a layer of GaN **34** formed on a substrate **32** of sapphire. According to Shmagin et al., the GaN layer **34** is a buffer layer (column 5, lines 15-22), which separates the semiconductor material layer **36** from the substrate **32**. Scintillation is demonstrated via luminescence of the heterostructure layer when illuminated with a UV light source (column 4, lines 60-62). In regards to claim 12, Shmagin et al. further disclose a multiple heterostructure arrangement (Figure 4) wherein a plurality of alternating GaN layers and InGaN layers are formed on a sapphire substrate.

Response to Arguments

6. The amendment to the abstract, dated 5/23/2005, has overcome the objections to the specification, as detailed in paragraph 4 of the Office action dated 2/24/2005. As such, the objection to the specification has been withdrawn. The objection to the title remains, based on the new grounds detailed above.

7. Applicant's arguments filed 5/23/2005 have been fully considered but they are not persuasive. Claims 1-5 have been rejected under 35 U.S.C. 102(b) as being anticipated by Shmagin et al.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., radiation comprises Cu-K α -rays, X-rays, or γ -rays and that a scintillation counter can detect such radiation via the excitation (see page 10, paragraph 2 of arguments)) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant further argues that Shmagin et al. do not explicitly state that the disclosed structure is a scintillator (see page 10, paragraph 4). While it is correct that Shmagin et al. do not disclose that the disclosed structure is a scintillator, the disclosed structure is the same as applicant's claimed structure. As such, it would inherently have the same scintillation properties as the present invention. "[T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." *Atlas Powder Co. v. Ireco Inc.*, 190F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). Thus the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. *In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977).

Additionally, although Shmagin et al. do not specifically disclose that the structure is a scintillator, they do show scintillation properties, i.e. that the material fluoresces when exposed to a UV radiation source. Applicant's asserts that UV light

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causing the structure to emit light is not equivalent to radiation exciting the structure (page 11, paragraphs 2-3). However, UV light is part of the electromagnetic spectrum and thus constitutes a form of radiation. Further, Shmagin et al. demonstrate that the structure glows with a spectrum shown in Figure 8, with a center wavelength of 404-nm when illuminated by a UV laser with a wavelength of 280-nm (column 8, lines 15-17 and lines 40-44).

8. Applicant's arguments, see page 14, lines 11-14, filed 5/23/2005, with respect to claims 6-10 have been fully considered and are persuasive. The rejection of claims 6-10 has been withdrawn.

Allowable Subject Matter

9. Claims 6-11 and 13-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

Claims 6-10 are directed towards a scintillation counter employing a Group III nitride semiconductor as a scintillator. While the structure of the scintillator may be known in the art, the prior art fails to reasonably suggest or teach the use of the Group III nitride semiconductor as a scintillator. As such, applicant's disclosure provides a

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novel and nonobvious improvement over the prior art. Accordingly, claims 6-10 would be allowable. Claims 13-17 would be allowable by virtue of their dependence on claims 6-10.

Claim 11 is directed towards a Group III nitride semiconductor layer that emits fluorescent light when irradiated by a Cu-K α -ray source, an X-ray source, and a γ -ray source. While the claimed structure is known in the art, there is no reasonable expectation of fluorescent light emission of the semiconductor layer when subjected to those specific forms of radiation. As such, applicant's disclosure provides a novel and nonobvious improvement over the prior art. Accordingly, claim 11 would be allowable.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Newacheck et al. (US Patent # 5,334,840) demonstrate neutron-induced scintillation of a BN layer (column 2, lines 10-14). Lozykowski et al. (US Patent # 6,410,669) demonstrate electron beam-induced scintillation of a GaN layer (column 2, lines 27-34).

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frederick F. Rosenberger whose telephone number is 571-272-6107. The examiner can normally be reached on Monday-Friday 7:30 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Frederick F. Rosenberger
Patent Examiner
GAU 2878



DAVID PORTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800